

Radical Mastectomy with Reconstruction Using Latissimus Dorsi Flap: Surgical Technique and Clinical Considerations: Case Report

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ABSTRACT

Radical mastectomy remains a fundamental surgical option in the treatment of certain locally advanced breast cancers. In these cases, immediate reconstruction using a latissimus dorsi myocutaneous flap represents a safe and versatile alternative that allows restoration of breast volume and shape, with favorable aesthetic and functional outcomes. This article details the surgical technique used for harvesting and transferring the latissimus dorsi flap, as well as the most relevant clinical aspects for its indication and planning. Patient selection criteria, preoperative preparation, anatomical considerations, postoperative management, and potential complications are addressed. Furthermore, the benefits of this technique are discussed in comparison with other reconstructive options, emphasizing its usefulness in contexts where local surgical bed conditions limit the use of abdominal flaps or implants. The accumulated experience demonstrates that the latissimus dorsi flap is an effective and reliable tool for immediate breast reconstruction following radical mastectomy.

KEYWORDS Radical mastectomy, breast reconstruction, latissimus dorsi flap, breast cancer, oncoplastic surgery, myocutaneous flap, surgical technique, reconstructive surgery, immediate reconstruction, postoperative complications.

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INTRODUCTION

Breast cancer is the most common malignancy among women worldwide and one of the leading causes of cancer-related death in the female population. Despite advances in early detection and conservative treatments, a significant percentage of patients continue to be diagnosed at locally advanced stages, where radical mastectomy remains the most appropriate surgical treatment. This procedure involves complete removal of the mammary gland, the nipple-areola

complex, and frequently muscular structures and axillary lymph nodes, aiming for adequate local disease control.¹ However, radical mastectomy has a significant physical, emotional, and psychological impact on patients due to the considerable loss of body image and perceived femininity. For this reason, immediate breast reconstruction has become an essential part of comprehensive breast cancer care, not only for aesthetic purposes but also as a tool to improve patients' quality of life and self-esteem.²

Radical Mastectomy with Reconstruction Using Latissimus Dorsi Flap: Surgical Technique and Clinical Considerations: Case Report

Among the various reconstructive techniques available, the latissimus dorsi myocutaneous flap has become a safe, versatile, and reliable option, especially in clinical settings where other techniques, such as the transverse rectus abdominis myocutaneous (TRAM) flap or breast implants, are contraindicated or limited. This technique uses the latissimus dorsi muscle along with overlying skin and subcutaneous tissue to create adequate volume in the breast area, enabling satisfactory anatomical and functional reconstruction.³

Advantages of the latissimus dorsi flap include its rich vascularization, relative technical ease in harvesting, compatibility with implants or expanders if additional volume is needed, and an acceptably low rate of major complications. Nevertheless, its execution requires detailed knowledge of regional anatomy, correct surgical planning, and appropriate postoperative follow-up to prevent complications such as seroma formation, partial necrosis, or shoulder functional limitation.⁴

This article aims to thoroughly describe the surgical technique of radical mastectomy followed by reconstruction with the latissimus dorsi muscle flap, reviewing the most relevant clinical considerations for its indication, planning, and follow-up. It also discusses the main advantages, disadvantages, complications, and functional and aesthetic outcomes based on accumulated experience and current literature.⁵

CASE REPORT

A 51-year-old female patient with no previous surgical history or relevant comorbidities, except for controlled hypertension treated with enalapril, presented with a progressively enlarging mass in the left breast over four months, without associated systemic symptoms. Physical examination revealed a tumor approximately 5 cm in the upper outer quadrant of the left breast (**Figure 1**), with irregular borders, firmly adhered to deep planes, with signs of skin retraction and local erythema. Ipsilateral axillary lymphadenopathy was palpable, mobile, and tender.



Figure 1: Photograph prior to the surgical procedure.

Mammography and ultrasound classified the lesion as BI-RADS 5, and a core needle biopsy revealed an infiltrating ductal carcinoma, grade II. Hormone receptors were positive (ER 90%, PR 60%), HER2 negative, with a Ki-67 proliferation index of 35%. Breast MRI showed no additional lesions or contralateral involvement. Staging studies, including thoracoabdominal CT and bone scan, excluded distant metastases, classifying the tumor as T3N1M0 (Stage

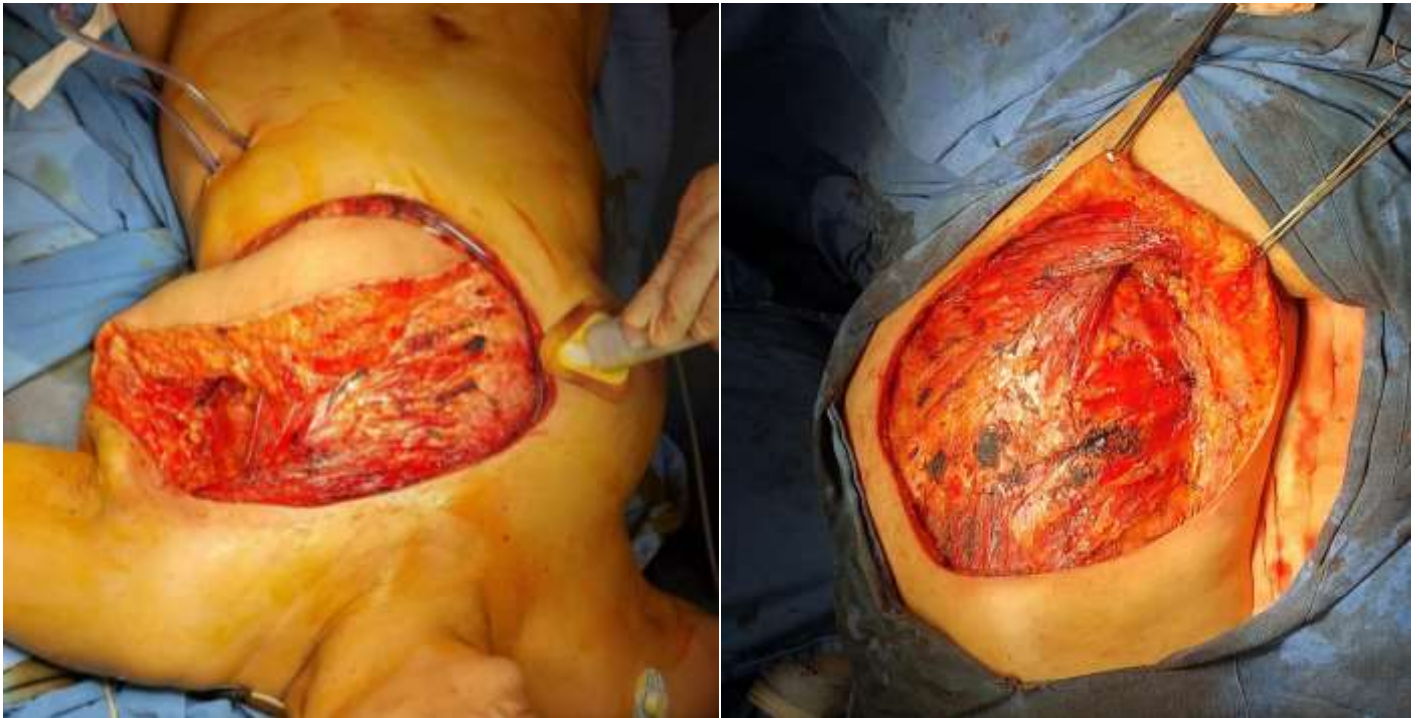
IIIB). The case was discussed in a multidisciplinary tumor board, and it was decided to proceed with left radical mastectomy with level I and II axillary lymph node dissection, followed by immediate breast reconstruction with a latissimus dorsi myocutaneous flap.

Under general anesthesia with the patient in the supine position, a wide elliptical incision was made, including the nipple-areola complex and skin compromised by tumor

Radical Mastectomy with Reconstruction Using Latissimus Dorsi Flap: Surgical Technique and Clinical Considerations: Case Report

retraction. The entire breast tissue was resected (**Figure 2**), including the fascia of the pectoralis major muscle, maintaining oncologic margins. Axillary dissection was

performed carefully, preserving the long thoracic and thoracodorsal nerves, as well as the thoracodorsal neurovascular bundle.



Figures 2: Radical mastectomy.

For reconstruction, the patient was turned to the lateral decubitus position. A myocutaneous flap was designed on the left thoracodorsal region, with a 15 x 8 cm skin island centered over the latissimus dorsi muscle, following natural skin tension lines to optimize donor site aesthetics. The latissimus dorsi muscle was dissected from its costal and lumbar insertions cranially, carefully preserving the thoracodorsal pedicle, which was dissected to its origin from the subscapular artery. The muscle was left attached at its humeral insertion to facilitate anatomic anchoring and partially preserve muscle function.

A subcutaneous tunnel was then created from the axilla to the anterior chest surgical bed. The flap was carefully rotated through this tunnel into the anterior region (**Figure 3**), avoiding torsion or compression of the pedicle. At the recipient site, the skin island was adapted to the thoracic skin and the muscle volume was sculpted to recreate a cone shape resembling the contralateral breast. The flap was fixed with absorbable sutures to the costal margin, pectoral fascia, and subcutaneous tissues. Drains were placed in the anterior chest bed and donor dorsal site.

Incisions were closed in layers without tension (**Figure 4**). The total surgical time was approximately four and a half hours, with an estimated blood loss of 300 ml, without need for transfusion.



Figure 3: Latissimus dorsi flap.



Figure 4: Breast reconstruction.

Postoperative evolution was favorable. The patient experienced mild pain managed with multimodal analgesia and was mobilized on the second day. Drains were gradually removed between the fifth and eighth days. A minor complication of dorsal seroma occurred, successfully treated with needle aspiration without infection or reoperation. No signs of flap necrosis or major complications were observed. Healing was satisfactory both in the chest and donor areas. Histopathology confirmed a 5.4 cm infiltrating ductal carcinoma with clear surgical margins and lymph node involvement in 4 out of 16 resected nodes. Adjuvant chemotherapy with anthracyclines and taxanes was indicated, followed by radiotherapy on the left chest wall and axilla. Hormonal therapy with tamoxifen was started for an estimated duration of 5 to 10 years.

At three months post-surgery, the patient had resumed work and daily activities, with full mobility of the left upper limb and excellent psychosocial adaptation to recovery. The aesthetic outcome was satisfactory, with a symmetric reconstructed breast and acceptable scars.

DISCUSSION

Radical mastectomy, defined as complete resection of the mammary gland along with axillary tissue and pectoralis major fascia, remains a cornerstone in the treatment of locally advanced breast cancer. However, the loss of breast volume and shape after this surgery causes significant aesthetic and psychological impact, making immediate or delayed

reconstructive techniques essential to improve quality of life and emotional well-being.^{6,7}

Immediate breast reconstruction using the latissimus dorsi myocutaneous flap is a safe and effective option, especially when implants or abdominal flaps are contraindicated or when adjuvant radiotherapy is anticipated. The latissimus dorsi muscle provides a robust and reliable vascular supply via the thoracodorsal pedicle, reducing flap necrosis risk and allowing adequate coverage of the surgical defect.^{6,7}

Additionally, this technique is technically less complex than microsurgical flaps and involves less donor site morbidity compared to other autologous flaps, facilitating faster and less painful recovery. In the presented case, careful flap design, preservation of the vascular pedicle, and respect for muscle insertions were key factors in surgical success and minimizing complications.^{6,7}

Literature supports the use of the latissimus dorsi flap in breast reconstruction, highlighting its versatility for small to medium breast sizes and applicability in patients requiring postoperative radiotherapy, as autologous tissue tolerates radiation better than implants or tissue expanders. The flap also provides a favorable body contour by utilizing dorsal skin and muscle, achieving a natural and symmetric appearance.⁸

However, limitations include a smaller reconstructive volume compared to abdominal flaps and a visible dorsal scar that may affect some patients' aesthetic satisfaction. Proper patient selection and clear communication regarding

Radical Mastectomy with Reconstruction Using Latissimus Dorsi Flap: Surgical Technique and Clinical Considerations: Case Report

expectations are crucial to optimize outcomes and acceptance.^{8,9}

Oncologically, immediate reconstruction has not been shown to compromise local control or survival when oncologic principles are followed. Furthermore, by improving body image and self-esteem, it may enhance adherence to adjuvant therapies and overall quality of life.^{8,9}

This case exemplifies how radical mastectomy followed by immediate reconstruction with the latissimus dorsi muscle flap can be performed with low complication risk, appropriate functional recovery, and good aesthetic results. Multidisciplinary management involving oncologists, plastic surgeons, and rehabilitation specialists is essential for optimal comprehensive care.^{8,9}

Although advances in microsurgical reconstruction have expanded options, the latissimus dorsi flap remains a valuable and accessible technique in many clinical settings, especially in resource-limited centers or patients with specific anatomical characteristics. Personalized reconstructive planning based on patient needs and features ensures a holistic approach promoting physical and emotional recovery after breast cancer treatment.¹⁰

CONCLUSION

In conclusion, radical mastectomy followed by immediate reconstruction with a latissimus dorsi myocutaneous flap is an effective, comprehensive surgical strategy in managing locally advanced breast cancer, combining oncologic goals with adequate aesthetic and functional restoration. This technique represents a valuable option for patients requiring complete breast tissue removal with axillary dissection, particularly when adjuvant radiotherapy is planned or when implants or abdominal microsurgical flaps are contraindicated.^{11, 12}

The latissimus dorsi flap provides a robust and reliable vascular supply via the thoracodorsal pedicle, ensuring flap viability and minimizing complications such as necrosis or dehiscence. Its versatility and relative technical simplicity make it accessible to centers with limited resources or microsurgical experience without compromising aesthetic outcomes or oncologic safety.¹³

Clinically and functionally, this autologous reconstruction provides adequate volume for patients with small to medium breasts and resistant tissue coverage against radiotherapy, reducing long-term complications and improving body symmetry. Although the dorsal scar is visible, it is generally well tolerated, and functional impact on shoulder movement can be minimized with early and proper rehabilitation.^{14,15}

Multidisciplinary integration in breast cancer management is key to the success of this approach, coordinating oncologic resection, immediate reconstruction, and adjuvant treatment to ensure the best possible quality of life. Immediate reconstruction does not interfere with oncologic surveillance or increase recurrence risk and significantly contributes to

psycho-emotional recovery by preserving body image and self-esteem.^{14,15}

Careful patient selection, detailed counseling about realistic aesthetic and functional expectations, possible complications, and limitations are essential. Personalized approaches based on anatomical characteristics, tumor stage, and individual preferences maximize benefits and minimize risks.^{14,15}

In summary, radical mastectomy with immediate reconstruction using a latissimus dorsi myocutaneous flap stands as a reliable reconstructive alternative with satisfactory oncologic and aesthetic outcomes that improve quality of life and overall experience for breast cancer patients. Proper implementation within a committed multidisciplinary team ensures comprehensive, humane, and patient-centered care, promoting full recovery encompassing physical, emotional, and social aspects.

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Radical Mastectomy with Reconstruction Using Latissimus Dorsi Flap: Surgical Technique and Clinical Considerations: Case Report

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